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Lungless Salamanders. — In the *Zoologischer Anzeiger*, Dr. Einar Lönnberg, of Upsala, has an interesting list of salamanders which have the lung rudimentary or wanting. The catalogue includes the results of his own work and that of Harris Wilder, Camerano, and Moore.

Salamanders may in this regard be divided into three classes : (1) those in which the lungs extend to the groin and are about 60 per cent of the length of the body. To this class belong certain Asiatic species of Diemictylus (Molge); (2) those in which the lungs extend only halfway from the axil to the groin, measuring 38–45 per cent of the length of the animal. To this class belong other species of Diemictylus, species of Salamandrella, Ranideus, and, among American species, *Ambystoma punctatum* and *A. microstomum*. Apparently the American species of Diemictylus (viridescens, torosus) have not been studied; (3) those without lungs or with merely a rudiment. In this class, among American species, belong the following: *Ambystoma opacum* (rudiment), *Aneideslug ubris*, *Plethodon cinereus*, *P. glutinosus*, *Spelerpes porphyriticus*, *S. ruber*, *S. longicauda*, *S. guttolineatus*, *S. bilineatus*, *Manculus quadridigitatus*, *Desmognathus fuscum*, *D. brimleyorum*, *D. nigrum*, and *D. achrophæum*. Other species of Spelerpes, with Leurognathus and Batrachoseps, are known to belong to this category, which probably includes all Plethodontidæ and Desmognathidæ.

"Camerano has rightly pointed out the importance of the lungs as a hydrostatic organ, and it seems quite possible that the great length of the lungs in many forms is an adaptation to aquatic life. But the lungless salamanders are not necessarily obliged to lead a terrestrial life, even if many of them do so; on the contrary, some of them are very positively aquatic in their habits." Such do not, however, as is the case with Diemictylus, remain suspended in the water, but crawl or wriggle at the bottom.

D. S. J.

The Egg of the Hagfish. — In the *Proceedings of the Natural History Society of Copenhagen*, Adolf Severin Jensen has a valuable account of the egg of the hagfish (*Myxine glutinosa*), entitled "Om Slimaalens Æg."

The egg of this singular creature was first described in 1859 by Allen Thompson. It has been noticed a few times since then, mostly from specimens taken in the stomachs of other fishes, but most who have written on the animal and its biology have never found a perfect egg.

The conclusion of Mr. Jensen's observations is that the hagfish fastens its egg by wiry, hair-like appendages to objects on the sea bottom. These appendages are fastened to either pole of the egg, which is oval in form. Jensen figures a dead stalk of Cellepora, to which four eggs are attached. He gives also several figures of the sucker-like anchors ("thread cells," or "spider cells"), each with two to four lobes in which the hairs which hold the egg terminate.

A species of hagfish (*Polistotrema stouti*), rather distantly related to Myxine, occurs on the Pacific coast, and is abundant in the Bay of Monterey, where various features of its structure have been studied by several workers in the Hopkins Seaside Laboratory, notably by Dr. G. C. Price, Dr. F. M. McFarland, Dr. C. W. Greene, Dr. Bashford Dean, Dr. Franz Döflein, and Dr. Howard Ayers. For a long time the egg of this species was unknown. At last the Chinese fishermen began to bring them in, saying that they got them by pressing the bodies of the females. Many of them were half decomposed when received. Later Dr. Dean and Dr. McFarland discovered that these eggs were not taken from the females at all, but from the stomachs of the males, which accounts for their half-digested condition. Nearly all the eggs of hagfish thus far found at Monterey are from the stomachs of male fishes.

Dr. Dean figures one individual in which the clumps of wiry filaments which hold the egg are caught in the encasing slime of an adult animal. The investigations of Mr. Jensen indicate that these eggs should be sought on the sea bottom attached to bryozoa or algæ.

Mr. Jensen notes that the Atlantic hagfish has no larval or Ammocœtes stage, such as the lamprey passes through, the young, of six centimeters, being similar to the grown fish. In this respect the California hagfish agrees with Myxine.

D. S. J.

Waite's Fishes of the Thetis Expedition. — In the *Memoirs of the Australian Museum*, Mr. Edgar R. Waite gives an account of the fishes taken by the trawling expedition of H. M. S. C. *Thetis*, Capt. C. P. Hildebrand, in the waters about Port Jackson. The collection obtained, of which a brief preliminary report has been already published, is a very interesting one, and the paper is one of the most valuable contributions yet made to the natural history of Australia. The excellent plates are to be especially commended.

One hundred and seven species were obtained by the *Thetis*, nine of which are new. These are: *Dasyatis thetidis*, *Chimæra orgilbyi*, *Anthias pulchellus*, *Monacanthus setosus*, *Sebastes* (rather Sebastodes)